

**Claim Amendments**

1. (Currently Amended) ~~An apparatus comprising:~~ The apparatus of claim 6,  
wherein:

~~a first node including a first end of a first channel and a first end of a second~~  
~~channel;~~

~~a second node including a second end of a first channel and a second end of~~  
~~a second channel;~~

~~a physical connection joining said first node and said second node through~~  
~~which signals of both said first channel and said second channel are carried; and~~

~~a first controller connected to said first end of said first channel and a second~~  
~~controller connected to said first end of said second channel, said first controller and~~  
~~said second controller being in communication and controlling transferring data from~~  
~~one of said two channels through said physical connection in response to~~  
~~determining that valid data is unavailable in the other channel to be transferred.~~

2. (Currently Amended) The apparatus according to claim 4 ~~6~~, further  
comprising a third controller connected to the second end of the first channel and a  
fourth controller connected to the second end of the second channel, said third and  
fourth controllers being in communication with each other and obtaining information  
on whether the second ends of said two channels can accept more data.

3. (Previously Presented) The apparatus according to claim 2, said first controller and said third controller being in communication and said second controller and said fourth controller being in communication, said first and second controllers controlling the interleaving of data further based on said information.

4. (Currently Amended) The apparatus according to claim 4 6, said second node further comprising a queue for receiving data packets from said second end of said first channel and said second end of said second channel and for delivering said packets to a processor bus.

5. (Previously Presented) The apparatus according to claim 4, wherein said processor bus carries packets and said physical connection carries flits.

6. (Currently Amended) ~~The apparatus according to claim 1, wherein~~ An apparatus, comprising:

a first node including a first end of a first channel and a first end of a second channel;

a second node including a second end of a first channel and a second end of a second channel;

a physical connection joining said first node and said second node through which signals of both said first channel and said second channel are carried; and

a first controller connected to said first end of said first channel and a second controller connected to said first end of said second channel, said first controller and said second controller being in communication and one of said first and second channels transfers flits on the physical connection, in response to determining that a flit being transferred by the other channel is the end of a packet.

7. (Currently Amended) ~~A method, comprising~~ The method of claim 11, further comprising:

~~determining availability of valid data in each of at least two channels, wherein said at least two channels share a physical connection to transfer data between a first node and a second node;~~

determining backpressure from a receiver of each channel; and  
transferring flits from one of said at least two channels along the physical connection in response to determining that valid data is unavailable in the other channel of said at least two channels based on said backpressure.

8. (Currently Amended) The method according to claim 7 11, further comprising reforming said flits into packets at the other end of said channels.

9. (Previously Presented) The method according to claim 8, further comprising storing said reformed packets in queues for transfer to a processor bus.

10. (Original) The method according to claim 9, wherein said processor bus transfers data in a different type of resource sharing paradigm than said physical connection.

11. (Currently Amended) ~~The method according to claim 7, further comprising~~  
A method, comprising:

determining availability of valid data in each of at least two channels, wherein  
said at least two channels share a physical connection to transfer data between a  
first node and a second node; and

transferring flits from a channel across the physical connection, in response to determining that a flit being transferred by the other channel is the end of a packet.

12. (Currently Amended) The method according to claim 7 11, further comprising transferring said flits from each channel across the physical connection, in response to determining that the other channel is receiving backpressure from the receiver.

13. (Currently Amended) ~~A system comprising~~ The system of claim 14, further comprising:

~~a first node;~~

~~a second node;~~

~~at least one physical connection connecting said first node to said second~~  
~~node;~~

~~a processor bus connected to said second node;~~

~~a first data channel and a second data channel each having a first end in said~~  
~~first node and a second end in said second node, and both channels being carried~~  
~~by said physical connection; and~~

~~said channels carrying data packets divided into flits, with flits from one of the~~  
~~two data channels being transferred in said physical connection when there is no flit~~  
~~available in the other data channel for a transfer.~~

14. (Currently Amended) ~~The system according to claim 13, A system~~  
comprising:

a first node;

a second node;

at least one physical connection connecting said first node to said second  
node;

a processor bus connected to said second node;

a first data channel and a second data channel each having a first end in said  
first node and a second end in said second node, and both channels being carried  
by said physical connection; and

said channels carrying data packets divided into flits, wherein one of said first and second data channels transfers flits on the physical connection, in response to determining that a flit being sent by the other data channel is the end of a packet.

15. (Currently Amended) The system according to claim ~~13~~ 14, wherein flits are interleaved further based on whether a receiving end of each channel is able to receive more flits.

16. (Previously Presented) The system according to claim 15, wherein one of said first and second data channels utilizes the physical connection to transfer flits, in response to determining that the receiving end of the other data channel is unable to receive more flits.

17. (Canceled)

18. (Canceled)

19. (Currently Amended) The apparatus according to claim ~~17~~ 6, wherein said first and second controllers controlling the interleaving of data further based on whether the first and second channels receives back pressure.

20. (Previously Presented) The apparatus according to claim 19, wherein one of said first and second controllers transfers data across said physical connection, in response to determining that the channel connecting to the other controller receives back pressure.

21. (Currently Amended) ~~A method comprising~~ The method of claim 23,  
further comprising:

determining whether a the first controller and a the second controller have data to send, ~~wherein the first and second controllers are connected to a channel;~~  
and

in response to determining that the second controller does not have data to send, sending data via the first controller.

22. (Canceled) ~~The method according to claim 21, further comprising:~~  
~~determining which controller was the last one to send data.~~

23. (Currently Amended) ~~The method according to claim 22, further comprising~~ A method, comprising:  
determining whether a first controller or a second controller was the last one to send data, wherein the first and second controllers are connected to a channel;  
and

determining the first controller is starting to send a new packet, in response to determining that the first controller was the last one to send data.

24. (Previously Presented) The method according to claim 23, further comprising:

in response to determining that the new packet is absent, sending data via the second controller.

25. (Canceled)

26. (Currently Amended) The method according to claim 23 22, further comprising:

determining whether the second controller is starting to send a new packet, in response to determining that the second controller was the last one to send data.

27. (Previously Presented) The method according to claim 26, further comprising:

in response to determining that the second controller is starting to send a new packet, sending data via the second controller.